MONTANA Natural Heritage Program

A program of the
Natural Resource Information System
Montana State Library

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From the Director

The New Year always prompts us to look back at where we've been and set goals for the months ahead. 1999 saw tremendous change and growth in the Heritage Program, and we ended it with a long list of accomplishments.

Our flagship event was the launch of the Rare Plant Field Guide on our Website. The first of its kind in the country, it offers Internet access to high-quality photos, drawings, maps and descriptions of over 300 plants that are rare or at-risk in Montana.

We also completed our first Wetland Inventory, which identified 60 outstanding wetlands in the Flathead River watershed. This was a big step toward building statewide data on outstanding ecological sites, to complement our rare species data. Less flashy but no less significant, we also completed a four-year strategic plan; as one of the outcomes, we launched this newsletter sporting our new logo.

But we're not ready to rest on our laurels and have big plans for the new millenium. Our inventory work in 2000 will focus on filling key data gaps, with emphasis on species and communities of global significance (did you know Montana has over 100?). We will also concentrate on outstanding natural habitat in some of Montana's most diverse landscapes (the upper Yellowstone watershed, the Centennial Valley, the Bitter Creek grasslands of Valley County). We'll also expand our On-line Field Guide to include plant communities and more animal species. An added feature in the Field Guide will be information on ecological requirements and "friendly" management practices for rare species and natural communities.

You'll soon be seeing new, more powerful search features in our website, as well. They'll enable you to quickly and easily perform your own "site screening" for natural heritage features (we now process more than 100 routine geographic searches per month). You'll be able to display and download species and community location information and create your own base maps by selecting data layers in the NRIS map library. Many more of our reports will also be available for viewing, printing or downloading through our website.

In short, we plan to harness the power of the Internet to deliver information to you quickly and efficiently. We hope the combination of solid data, knowledgeable staff, and the technical resources we have available will help you make better day-to-day and on-the-ground decisions. - *Sue Crispin*

1999 Field Season Highlights

Zoology Discoveries

In a state where the animals that receive the most attention are big, showy, and have a backbone, Heritage Program discoveries in 1999 centered on the obscure and spineless.

Starting in the spring, Zoologist Paul Hendricks found a new location for the state endemic Carinate Mountainsnail (*Oreohelix elrodi*) above Goat Creek in the Swan Range. He also confirmed that the species still exists along Lion Creek (also in the Swan Range). The only other known locality worldwide for this globally-rare snail is in the McDonald Lake area of the Mission Mountains.

Another globally-rare mollusk, the Spotted Slug (*Magnipelta mycophaga*) turned up at a new location along Marten Creek in Sanders County. While the distribution and numbers of this mollusk are still poorly-known, it seems to be widespread in Montana west of the Continental Divide.

Carinate Mountainsnail
(photo by Paul Hendricks)

During early summer, Paul Hendricks and Mike Roedel struck biological paydirt when they captured three Great Basin Pocket Mice (*Perognathus parvus*) during their inventory of the Centennial Sandhills in Beaverhead County. This small nocturnal rodent hadn't been reported in Montana since 1961, and had never before been observed in the Centennial Valley.

In the fall, cave explorer Sam Martinez joined Paul to search for rare aquatic crustaceans in Glacier National Park. They rediscovered two species first reported there in 1977 but not documented since. Out-of-state experts helped identify one species as a globally rare isopod (*Salmasellus steganothrix*)-- like an aquatic pill bug--known elsewhere only from one cave area in Alberta and another in south-central Washington state. The other species is a new species of amphipod (*Stygobromus "glacialis"*). Its entire known world distribution consists of two caves in Glacier National Park and one along Trail Creek off the N. Fork Flathead River. Neither species had been collected in the last 20 years.

***Optimolocus,** pronounced *"op-tih-moe-**lo**-cus,"* from Latin *optimo,* best and *locus,*place; after *Enallagma optimolocus,* a damselfly found only in Montana.

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A partnership between The Nature Conservancy and the Montana State Library

1999 Ecology Highlights

As part of a multi-year landscape survey project in Valley and Phillips counties, Heritage Ecologist Steve Cooper found outstanding examples of Montana's prairie grasslands on state, federal and private lands. Particularly impressive in terms of condition and size is a block of state lands between Glasgow and Opheim that supports a mosaic of upland communities largely dominated by porcupine grass (*Stipa curtiseta*), thick-spiked wheatgrass (*Elymus lanceolatus*), western wheatgrass (*Pascopyrum smithii*) and green needlegrass (*Stipa viridula*). This extensive tract is perhaps the largest remaining example of what was productive mid-grass prairie, virtually all of which, even in Montana, has been put under the plow. This project is off to a good start, thanks to Dave Waller at the Malta Bureau of Land Management Office (our project partner), and the gracious cooperation of area ranchers, especially Lynn and Debby Cornwell.

Montana is home to several sagebrush species, a few of which have very limited distribution. Black sagebrush *(Artemisia nova)* is one such species. Last spring, while preparing to inventory significant landscapes and plant community types in the Upper Yellowstone Watershed, Ecologist Cathie Jean found an old, questionable record for *Artemisia "arbuscula"* (an old name for black sagebrush) in Park County on the Gallatin National Forest. She contacted Dan Tyers, Wildlife Biologist at the Gardiner Ranger District, who had a vegetation map showing an *Artemisia nova* sagebrush community along a broad ridge above a steep escarpment above the Yellowstone River. Cathie relocated and documented the black sagebrush community, which will be identified as an important ecological site in the Heritage Program database.

1999 Botany Highlights

What do you do when botanists in different states disagree about a species' rarity? Answer: An on-site reality-check. Heritage Botanist Bonnie Heidel teamed up with her Wyoming counterpart to inventory globally rare plants in Bighorn Canyon National Recreation Area, a 70-mile-long corridor that straddles state lines. Six globally rare and 21 state rare species were documented as sharing the Bighorn Canyon with boaters, mountain goats, and wild horses. Our surveys confirmed that none are imperiled in the study area, but two that are wetland species are strongly affected by management actions, and Bighorn Canyon NRA is significant in their protection.

Bighorn fleabane (*Erigeron allocotus*) is a dweller of cliffs and cushion plant communities, and the Bighorn Canyon is the center of its limited range. Heritage surveys documented three giant populations that span the state line and extend into two BLM Areas of Critical Environmental Concern. The species is currently designated as "watch" (as opposed to "special concern") in Montana. Photo by Bonnie Heidel

In another project, Bonnie explored the far reaches of Montana's northeast corner. She found that the handsome plains of Sheridan County harbor a tremendous diversity of wetlands and grassland types, some not previously documented in Montana or adjoining states. Her surveys turned up a remarkable latticework of wheatgrass-needlegrass community types, as well as some rare spring-seep and wet-meadow plants. She also found wetland plants that had not been seen since WWII – or reported in Montana only from general records – thriving in some of the state's most extensive glacial outwash and moraines.

Staff Profile

If you've ever called the Heritage Program Office, chances are you've talked to Melony Bruhn. Mel manages our grants and finances, keeps the office running, and maintains order amidst the general hubbub of Heritage Program operations. With the program since 1995, Mel studied business administration at Pacific Lutheran University and honed her skills in the U.S. Army. She lives on a ranch "under the nose of the Sleeping Giant" with her husband, Tom, her three teenage sons (the youngest of seven children), and their horses.

Vegetation Classification Completed for Southwest Montana

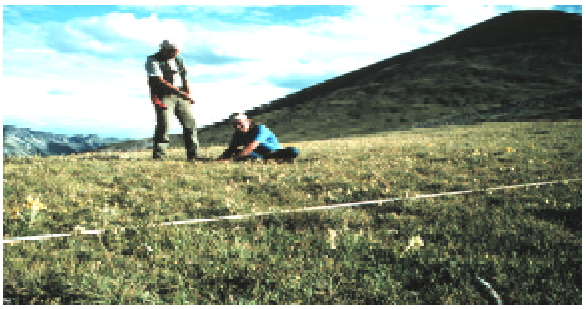
When you think of southwest Montana, do you imagine fantastic fishing in the Big Hole River, bird watching at Red Rock Lakes National Wildlife Refuge, or hiking and riding horseback in the Beaverhead National Forest? Perhaps the results of a study we have just completed can give you yet another perspective.

Over the last two years, Heritage Ecologist Steve Cooper has been working with Brian Hockett in the Dillon office of the Bureau of Land Management to identify and document plant communities in the Beaverhead Mountains Section of southwest Montana. The goal of this project was to classify and describe all the community types in the region, identify plant species of special concern, and highlight landscapes of particular ecological significance.

The Beaverhead Mountains Section is an ecoregion defined by R.G. Bailey that extends from the Centennial Mountains south of Red Rock Lakes National Wildlife Refuge in southwestern Montana, west to the continental divide along the Beaverhead Mountains and includes the headwaters of the Beaverhead, Madison and Clarks Fork River. The Beaverhead Mountains Section provides a good framework for classifying and evaluating plant community diversity. It has a wealth of vegetation types and has been the subject of many studies documenting that diversity. Geologic diversity and the overlap of floristic zones have produced strong environmental gradients and habitat for a great variety of vascular plants. In addition to the richness of vegetation types, 130 vascular plant species of special concern are known to occur in this region, occupying either valley or montane wetlands, sand dunes and grass and shrubland habitats in the foothills, or mountainous areas.

The Beaverhead Mountains section is the first ecoregion in Montana to have a comprehensive vegetation classification assembled into a single document. Our report has three major components; the first is a complete list of 273 plant associations with state and global Heritage ranks that reflect their conservation status. The second component is a dichotomous plant association key organized by physiognomic type. The key is arranged according to the National Vegetation Classification, using the concept of forest, woodland, shrubland and herbaceous vegetation. The key includes a number of newly identified vegetation types, identified through recent inventory and through analysis and reinterpretation of previously identified plant communities. The third component includes standardized descriptions for 130 plant associations.

The rarest community documented (globally critically-imperiled) was silver sage / Great Basin wildrye *(Artemisia cana/ Leymus cinereus)* shrubland, found in a single location at Big Muddy Creek. Another shrubland community, Basin big-sage / Great Basin wildrye (*Artemisia tridentata ssp. tridentata/Leyums cinereus),* ranked as globally imperiled, occurs in bottomlands or riparian areas and is at risk from certain grazing practices, weeds, and in some cases conversion to agriculture. Two high-elevation community types, Parry's rush / bear fleabane (*Juncus parryi - Erigeron ursinus)* and Merten's moss-heather / Payson's sedge (*Cassiope mertensiana / Carex paysonis)* occur as small patches in alpine or high subalpine environments, and are not particularly threatened because of their remote locations. Another community, thickspike wheatgrass / silverleaf phacelia (*Elymus lanceolatus / Phacelia hastata),* occurs in the Centennial Sandhills and relies on a natural disturbance regime maintained by animal- or fire-induced blowouts. Over time, the ranks indicating the rarity of some communities will likely decrease, as additional stands are discovered, while other types may become increasingly rare and increase in rank due to loss of habitat or the increase of noxious weeds.



Steve Cooper and Peter Lesica establish a vegetation transect in the East Pioneer Range in the Beaverhead Section. (Photo by Steve Cooper)

The report also highlights some significant natural landscapes that best exemplify the section's biodiversity. Among these are Bannock, Blacktail & Robb-Ledford, the Centennial Mountains & Valley, the Centennial Sandhills, Johnson Gulch-Deer Canyon Creek, Morrison Lake Wetlands and Baldy Mountain. Each landscape includes BLM lands as well as other types of public ownership. Landscape descriptions include location, environment, biological features and conservation value, and are intended to help guide the appreciation and stewardship of plant communities and species of special concern in the ecoregion. Overall, the results of this project can provide a cornerstone for understanding and effectively managing a sizeable part of Montana's natural landscape.

Heritage Program Services-a quick look

Each year the Heritage Program responds to hundreds of requests for information about Montana species, ecological communities and other biological sites and features of special concern. Requesters include state and federal agencies, private organizations and businesses, students and teachers, and local government.

Here are some typical questions that we answer:

- Are there any rare species in the vicinity of a proposed weed control project?
- How many federally-listed species occur in Montana? Are there any in Fergus County?
- Which amphibians and reptiles are native to Montana? What is their status?
- What are the habitat requirements for the Lemhi Penstemon (*Penstemon lemhiensis*)? How can I distinguish it from other species that resemble it?

To place a data request, call Margaret Beer at 406-444-0914 (or email mbeer@state.mt.us). She will ask about your project or data requirements and ensure that a response is tailored to your needs.

Research Natural Areas: Big Sky Benchmarks

In Montana, both the U.S. Forest Service (USFS) and the U.S. Fish and Wildlife Service (FWS) have designated Research Natural Areas. RNAs are places that are maintained under natural conditions to conserve biological diversity, provide locations for conducting research and monitoring, and promote natural resource education. These areas typically include high-quality examples of widespread ecosystems, unique ecosystems or ecological features, or sensitive species of plants or animals and their habitat.

The Forest Service has established or proposed 69 RNAs, largely in forested western Montana where USFS lands are concentrated. In contrast, the Fish & Wildlife Service has designated 15 RNAs, located mostly on National Wildlife Refuges in the Great Plains landscape of eastern Montana.

RNAs represent an invaluable ecological resource for scientists, managers and educators (photo by Angela Evenden)

The Natural Heritage Program tracks all of these areas in our Managed Areas database, and we maintain maps of boundaries as part of our statewide "Stewardship" GIS data layer (stay tuned for more about this in an upcoming issue). We've also recently cooperated with USFS and FWS on two projects aimed at documenting RNA values and making information on them more widely available to researchers, educators and the public.

RNA Inventory on Montana's National Wildlife Refuges

In the first of these projects, Heritage scientists inventoried all 15 USFWS RNAs in Montana to evaluate the vegetation and botanical features represented within them. The FWS selected these RNAs to represent broad types of "potential natural vegetation." However, detailed ecological and botanical inventories had never been done. Heritage Botanist Bonnie Heidel and Ecologist Steve Cooper spent part of two summers surveying all 15 RNAs in five National Wildlife Refuges to document outstanding representative vegetation, rare or unusual vegetation types, and rare plant species. They also noted climax conditions and areas where natural succession was taking place.

What did they find?

- Expanses of productive wheatgrass-needlegrass prairie that have been reduced elsewhere in the state to minute fractions of their original extent (Benton Lake NWR);
- Previously undocumented prairie types on the moraines of the Missouri Coteau (Medicine Lake NWR);
- An outstanding 10-mile-long segment of the Missouri River with cottonwood regeneration, valley-bottom remnants, and an cross-section of breaklands vegetation (Charles M. Russell NWR); and
- Old-growth limber pine and other significant mature timber stands (Red Rock Lakes NWR).

A final report (Cooper and Heidel 1999) describes each of these RNAs, their ecological values, and the overall diversity represented by RNAs on Montana's National Wildlife Refuges. The report is available on our website at http://nris.state.mt.us/mtnhp (navigate to 'plants' and 'reports').

Two Calf Island, one of numerous RNAs inventoried on the Charles M. Russell National Wildlife Refuge by Heritage Program staff. (photo by Bonnie Heidel)

New Website and Publication:
Forest Service RNAs of the Northern, Intermountain, and Southwestern Regions

In another project, Heritage Information Manager Margaret Beer has been working with the U.S. Forest Service, former USFS Region 1 RNA Coordinator Angela Evenden, and other state heritage programs in the West to assemble information on hundreds of Research Natural Areas in eleven Rocky Mountain and southwestern states. The results will be posted soon on an interactive, searchable website, and later published by the Forest Service as a hard-copy reference.

Both the website and publication will provide a description of each RNA, along with its general location, dominant vegetation, and whom to contact for further information. For RNAs in Montana, site descriptions are accompanied by photographs and additional data on climate and key environmental factors. Also included in the website will be background information on RNAs, research opportunities, guidelines on RNA use, links, and references.

Check the next issue of ***Optimolocus*** for the RNA website address and details on the accompanying publication.